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09/970,613	10/04/2001	Mark Holst	163 CON DIV	3611
25559	7590	02/23/2005	EXAMINER	
ATMI, INC. 7 COMMERCE DRIVE DANBURY, CT 06810			DUONG, THANH P	
			ART UNIT	PAPER NUMBER
			1764	
DATE MAILED: 02/23/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/970,613

Applicant(s)

HOLST ET AL.

Examiner

Tom P Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 61-110 is/are pending in the application.
- 4a) Of the above claim(s) 61-70 and 88-96 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,71-84,87 and 97-110 is/are rejected.
- 7) ☒ Claim(s) 1,85 and 86 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/04/01</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION*****Election/Restrictions***

1. Applicant's election with traverse of Group II, claims 1, 71-87, and 97-110 in the reply filed on 12/06/04 is acknowledged. The traversal is on the ground(s) that it would be a great economy of cost and effort on the part of the Office, and certainly to the applicants, if the closely related subject matter of Groups 1 - 11 claims were examined together in one application. Applicants maintain the subject matter of Groups I – II define, but one invention, and do not possess sufficient differences to warrant issuance of separate patents. This is not found persuasive because the inventions I and II are distinct because the process as claimed can be practiced by another materially different apparatus. The method of removing acidic components from the effluent gas stream can be done by feeding the effluent to a sorbent bed material or a leaching process other than a wet spray tower.

The requirement is still deemed proper and is therefore made FINAL.

***Information Disclosure Statement***

2. The information disclosure statement filed 10/4/01 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and **foreign patent**; each publication or that portion which caused it to be listed; and all other information (**Other Documents**) or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

### ***Drawings***

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference character(s) mentioned in the description: "232", "316", "474", and "600". Correction is required.
4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "472" have been used to designate the heat exchanger and the recycle line (page 34, line 4). Correction is required.

### ***Specification***

5. The disclosure is objected to because of the following informalities:  
On page 5, line 25, insert --vapor/liquid equilibria-- before "VLE".  
On page 18, line 10, insert --threshold limit value-- before "TLV".  
On page 34, line 5, "472" should be changed to --474-- (see Fig. 7).  
On page 34, line 8 "4809" should be changed to --480-- (see Fig. 7).  
On page 41, line 8, "fab" should be replaced with --fabrication--.  
Appropriate correction is required.
6. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Objections***

7. Claim 1 is objected to because of the following informalities:

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In claim 1, "the effluent gas stream" and "the oxidizable components" lack positive antecedent basis. It is not clear what is intended by "enhance its character". The apparatus of claim 1 merely recites method of treating effluent gas stream but lacks positive structural limitation.

Appropriate correction is required.

### DETAILED ACTION

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Tajima et al. (5,238,656). Tajima discloses an effluent gas stream treatment system, comprising: means for pre-treating (1) the effluent gas stream, to enhance its character for subsequent oxidation treatment; an oxidation unit (5) for oxidizing at least a portion of the oxidizable components of the effluent gas stream to abate

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such oxidizable components; means for post-oxidation treatment (6) of the effluent gas stream, to enhance the character of the effluent gas stream for discharge from the treatment system.

9. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Imamura (5,716,428). Imamura discloses an effluent gas stream treatment system, comprising: means for pre-treating (1) the effluent gas stream, to enhance its character for subsequent oxidation treatment; an oxidation unit (4) for oxidizing at least a portion of the oxidizable components of the effluent gas stream to abate such oxidizable components; means for post-oxidation treatment (7) of the effluent gas stream, to enhance the character of the effluent gas stream for discharge from the treatment system.

10. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Stilger et al. (5,601,790). Stilger discloses an effluent gas stream treatment system, comprising: means for pre-treating (12) the effluent gas stream, to enhance its character for subsequent oxidation treatment; an oxidation unit (24) for oxidizing at least a portion of the oxidizable components of the effluent gas stream to abate such oxidizable components; means for post-oxidation treatment (40) of the effluent gas stream, to enhance the character of the effluent gas stream for discharge from the treatment system.

11. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Sheu et al. (5,759,498). Sheu discloses an effluent gas stream treatment system, comprising: means for pre-treating (20) the effluent gas stream, to enhance its character for subsequent oxidation treatment; an oxidation unit (22) for oxidizing

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at least a portion of the oxidizable components of the effluent gas stream to abate such oxidizable components; means for post-oxidation treatment (34) of the effluent gas stream, to enhance the character of the effluent gas stream for discharge from the treatment system.

12. Claims 98, 103, and 105-107 are rejected under 35 U.S.C. 102(e) as being anticipated by Imamura (5,716,428). Imamura discloses an apparatus (Fig. 1) for treating an effluent stream comprising: a first scrubber (1) downstream from at least one semiconductor manufacturing process tool (Abstract) ; an thermal oxidizing unit (4), downstream from the first scrubber (1); and a second scrubber (7), downstream from the oxidizing unit (4); and a second scrubber (7) comprises of a wet spray tower to lower the temperature of the gas stream by using aqueous scrubbing medium; and oxidizing unit (4) is arranged to mix the gas stream with an oxidizer medium (2).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 100, 104, and 108 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imamura '428. Regarding claim 100, Imamura discloses the spray nozzle 1e but fails to disclose an inert gas-assisted atomizing nozzle type.

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However, it is conventional to provide such atomizing nozzle type and it would have been obvious to do so here in order to generate fine mists to maximize the scrubbing affect. Regarding claim 104, it is conventional to provide an oxidizing unit of comprises of a catalytic oxidizer and it would have been obvious to do so here to facilitate the oxidation of undesirable gas components such as carbon monoxide in a gas stream. (See USPN 5,238,656). Regarding claim 108, Imamura discloses the exhaust gas is from a semiconductor process (Col. 1, lines 22-25) but does not disclose the exhaust gas is generated from a particular semiconductor tools. However, the toxic gases are typically generated from semiconductor manufacturing tools such as CVD, etch, and ion implant tools (See USPN 5,213,767).

14. Claims 71-78, 80-83, 87, 97, 99, 102, and 109-110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imamura '428 in view of Stilger et al. (5,601,790). Regarding claim 71, 80, 87, 97, and 109-110, Imamura discloses an apparatus (Fig. 1) for treating an effluent fluid stream from one or more semiconductor manufacturing process tools (Abstract), comprising: a pre-treatment unit (1), downstream from at least one semiconductor manufacturing process tool, arranged to remove water soluble components (Col. 3, lines 1-3) from the effluent fluid stream; an oxidizing unit (4 and col. 8, lines 9-22), downstream from the pre-treatment unit, arranged to elevate the temperature of the effluent fluid stream (Col. 3, lines 38-41), utilize a hydrogen source (water from 1e) to effect destruction of at least a portion of halogen-containing components (Col. 6, lines 45-51) of the effluent fluid stream and effect oxidation



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of at least a portion of the oxidizable components (Col. 7, lines 28-31) of the effluent fluid stream; and a post-treatment unit (7 and Col. 8, lines 41-46), downstream from the oxidizing unit (4). With respect removing acidic components from the effluent fluid stream, it appears that the acidic components from the exhaust gas F3 are removed by the spray device 7, which constitutes a scrubber. Stilger makes it clear that it is conventional to provide an acid scrubber 40 downstream of an oxidation unit 24 to remove acid components (Fig. 1 and Col. 8, lines 33-40). Thus, it would have been obvious in view of Stilger to one having ordinary skill in the art to modify the gas treatment system of Imamura with an acid scrubber downstream of the oxidation unit in order to remove acid components prior to releasing the treated gas to the atmosphere. Regarding claims 72-74, Stilger discloses the halogen-containing components of the claimed invention (Col. 6, lines 45-51). Regarding claims 75 and 81, Stilger discloses the pre-treatment unit (1) removes particulates (dust) from the effluent stream (Col. 3, lines 36-36). Regarding claim 76, Stilger discloses the post-treatment unit (7) removes particulates from the effluent stream (Col. 4, lines 1-4). Regarding claims 77, 82 and 99, Imamura discloses a water tank 12, which appears to act as a quench unit, to lower the temperature of the gas stream F3. Stilger makes it clear that it is conventional to provide a water quench 38 to reduce the temperature of the combustion products to meet safety codes. Thus, it would have been obvious in view of Stilger to one having ordinary skill in the art to modify the gas treatment system of Imamura with a quench unit as taught by Stilger in order to cool the gas stream. Regarding claims 78 and 83, the applied

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references do not disclose expressly the material construction for the quench unit. However, the effluent gas stream contains corrosive components and therefore, it is obvious by design requirement to construct the quench unit with corrosion resistant alloy to minimize corrosion to the quench unit. Regarding claim 102, it is conventional to provide an atomizing nozzle in a quench unit and it would have been obvious to do so here to facilitate quenching of the gas. (See USPN 5,147,421).

15. Claim 79 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applied references (Imamura '428 in view of Stilger '790) as applied to claim 71 above, and further in view of Holst et al. (5,533,890). The applied references fail to disclose an oxidation made of a high temperature oxidation-resistant alloy. Holst teaches the combustor/thermal oxidizer (Abstract) is constructed with a high-alloy matrix bed (Col. 7, lines 11-17) of a heat resistant material in order to withstand a high oxidation temperature. Thus, it would have been obvious in view of the Holst '890 to one having ordinary skill in the art to construct the oxidization unit of the applied references with a heat resistant alloy material as taught by Holst in order to provide an oxidation unit that can operate at a high oxidation temperature.

16. Claim 84 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applied references (Imamura '428 in view of Stilger '790) as applied to claim 80 above, and further in view of Holst et al. (5,533,890). The applied references fail to disclose an oxidation made of a high temperature oxidation-resistant alloy. Holst teaches the combustor/thermal oxidizer (Abstract) is constructed with a

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high-alloy matrix bed (Col. 7, lines 11-17) of a heat resistant material in order to withstand a high oxidation temperature. Thus, it would have been obvious in view of the Holst '890 to one having ordinary skill in the art to construct the oxidization unit of the applied references with a heat resistant alloy material as taught by Holst in order to provide an oxidation unit that can operate at a high oxidation temperature.

17. Claim 101 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imamura '428 in view of Spink et al. (5,364,604). Imamura discloses a second scrubber (7) with a wet spray tower but fails to disclose a demister mesh packing. Spink teaches a demister 18 is mounted on the outlet of the scrubber to remove liquid droplets from the gas stream. Thus, it would have been obvious in view of Spink to one having ordinary skill in the art to modify the scrubber of Imamura with a demister packing as taught by Spink in order to facilitate removal of liquid droplets.

#### ***Allowable Subject Matter***

18. Claims 85 and 86 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re*

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*Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

19. Claims 1, 71-74, 80, and 98 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4-6, 28-29, and 32 of U.S. Patent No. 6,322,756 in view of Imamura (5,716,428). Although the conflicting claims are not identical, they are not patentably distinct from each other because USPN 6,322,756 claims substantially the same subject as the instant application. In claim 1, the terminology of "abate" is an alternative language of the terminology of "reduce" in claim 1 of USPN 6,322,756. USPN 6,322,756 discloses the claimed invention except a hydrogen source to effect destruction at least a portion of the halogen components. Imamura '428 teaches the gas stream, exiting the scrubber 1, containing water vapor (hydrogen source), which facilitates the destruction of the halogen components. Thus, it would have been obvious in view of Imamura to one having ordinary skill in the art to modify the gas treatment of USPN '756 with a hydrogen source as taught by Imamura in order to facilitate the destruction of the halogen components.

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### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom P Duong whose telephone number is (571) 272-2794. The examiner can normally be reached on 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tom Duong  
February 11, 2005

*TD*



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